Serum Creatinine as a Surrogate of Muscle Mass and 5-Year Survival in over 130,000 Long-Term Hemodialysis Patients: 2001 to 2006 National US Cohort

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INTRODUCTION

- In maintenance hemodialysis (MHD) patients receiving any given hemodialysis regimen, serum creatinine measured prior to a HD treatment session is a measure of nutritional status including muscle mass and probably striated meat intake. We therefore hypothesized that higher serum creatinine is a robust short- and long-term predictor of greater survival.
- We examined survival predictability of monthly measured pre-HD serum creatinine—averaged into calendar quarterly values—in 38,773 MHD patients in all DaVita clinics during the 7/2001-6/2006.

METHODOLOGY

- Patients were observed for up to 5 yrs (7/2001 to 6/2006) or until death or censorship.
- Time-dependent Cox models examined survival of 7 *a priori* selected quarterly-averaged serum creatinine categories as well as for 5-year time averaged continuous serum creatinine concentrations using cubic spline models, after adjustment for case-mix variables and measures of malnutrition-inflammation complex syndrome (MICS).

RESULTS

- Patients Demographics:
  - 61.9±15.5 yrs old
  - 45% female
  - 32% Black
  - 15% Hispanic
  - 50% diabetic

RESULTS

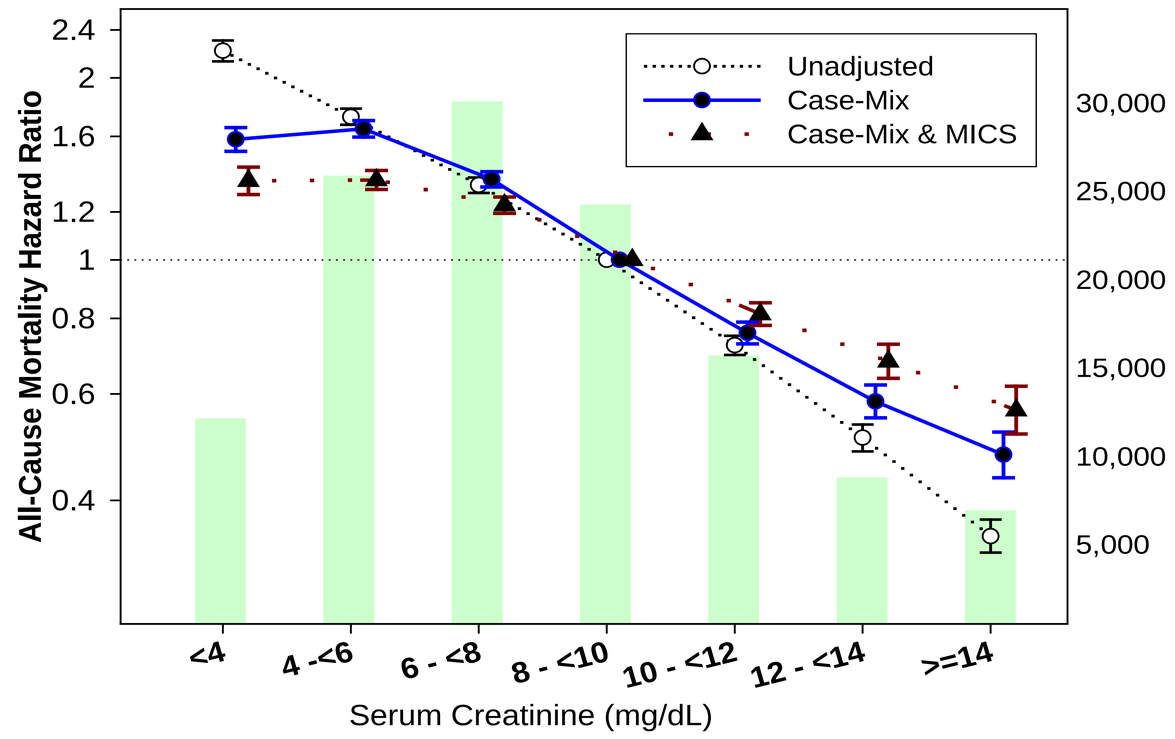

Figure 1. Death Hazard Ratios by Serum Creatinine Increments

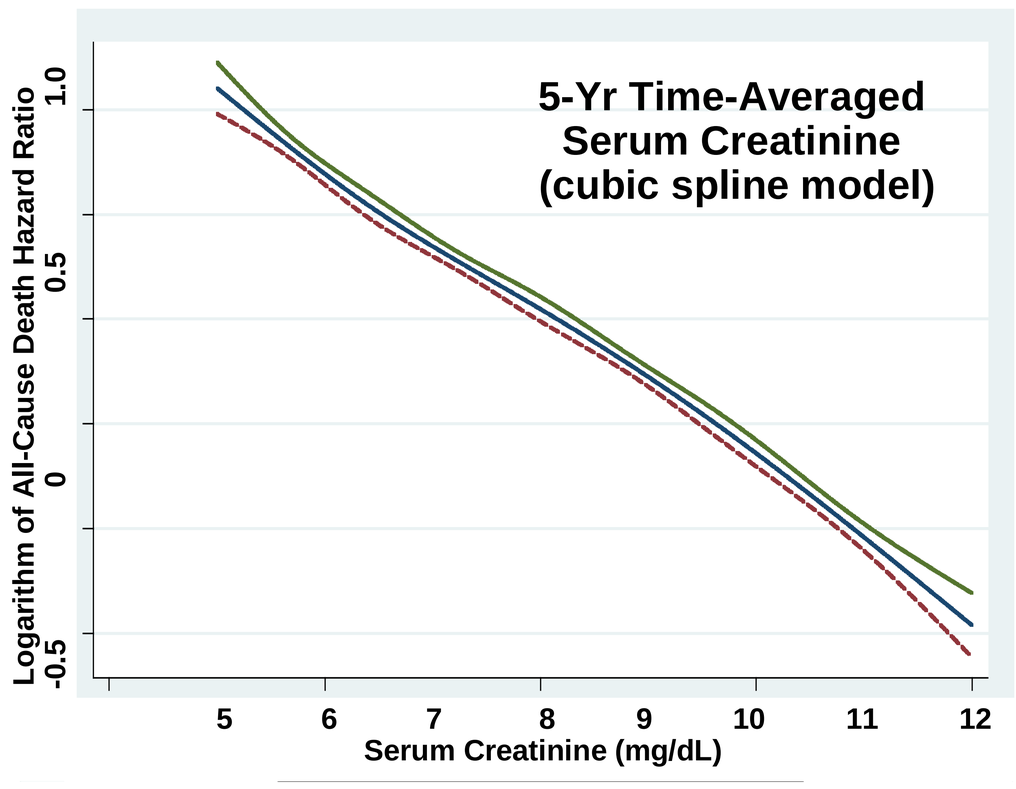

Figure 2. Cubic Spline Modeling of Death Hazard of Continuous Serum Creatinine

CONCLUSIONS

- Higher serum creatinine values were incrementally and linearly associated with greater survival in all models, The Association was consistent within any selected period of time (1 yr to 5-yr cohorts) and after virtually any level of multivariate adjustment (Figure 1) including in cubic spline models (Figure 2).

KEY LEARNINGS

- ✓ Higher serum creatinine levels are incrementally and linearly associated with greater long-term and short-term survival.
- ✓ This robust and strictly linear survival benefit may indicate the role of nutritional status, including muscle mass and probably meat intake, on longevity of MHD patients.
- ✓ An effect of illness, which can reduce both survival and food intake, cannot be excluded.
- ✓ Nutritional trials to examine this hypothesis are indicated.

We thank the patients who participated in this study and DaVita Clinical Research® (DCR) for support in preparing this poster. DCR is committed to advancing the knowledge and practice of kidney care.

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